

Rethinking the link between labour market flexibility and corporate competitiveness: a critique of the institutionalist literature

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Firms in the same political economy specialize in the pursuit of the same competitive strategy—so the argument of the competitiveness literature. The reason is that national institutions provide specific input factors which, in turn, are required for that strategy. To test this chain of reasoning, I identify the strategy of pharmaceutical firms in Germany, Italy, and the UK. Contrary to the expectations of the literature, I find that the firms in each economy pursue the same strategy *variety*. Seeking to understand how deviant firms can compete despite comparative institutional disadvantages, I analyse the importance of diverse labour-market institutions for the provision of particular skill types which, in turn, are needed for these strategies. These analyses show that firms succeed in circumventing institutional constraints at the national level by relying on two functionally equivalent institutions: open international labour markets and atypical contracts.

Keywords: corporate strategy, institutional political economy, skills

JEL classification: P16 political economy, L21 business objectives of the firm, L65 industry studies: chemicals, rubber, drugs, biotechnology

1. Introduction: can firms compete despite comparative institutional disadvantages?

It is a central argument of the competitiveness literature that firms which pursue the same competitive strategy need employees with similar skill types.¹ While employees with ‘general’ (Estevez-Abe *et al.*, 2001, p. 148) or ‘multi-tasking’ skills (Lindbeck and Snower, 2001a, pp. 1872–1873) are said to be needed for radical product innovation (RPI), workers with ‘firm-specific’ (Estevez-Abe

¹For particularly prominent proponents, see Porter (1990, pp. 73–76), Estevez-Abe *et al.* (2001, pp. 146, 174–176), Hall and Soskice (2001, pp. 36–44) and Lindbeck and Snower (2001a).

et al., 2001, p. 148) or ‘occupational specialization’ skills (Lindbeck and Snower, 2001a, p. 1872) presumably facilitate incremental product innovation (IPI). Low qualified and, hence, inexpensive labour is claimed to be required for low cost production (LCP).

The competitiveness literature further argues that to build competitive advantages, firms should exploit the comparative advantages offered by national labour-market institutions.² These comparative advantages consist in the relative abundance of the aforementioned skill types due to the way in which national labour-market institutions resolve the free-riding problem related to the professional education and training of employees (Culpepper, 2001; Estevez-Abe *et al.*, 2001; Hall and Soskice, 2001, pp. 25–26; Le Galès and Voelzkow, 2001, pp. 4–5). While flexible labour-market institutions presumably motivate employees to acquire general skills, rigid labour markets are said to encourage the acquisition of specific qualifications. Labour-market institutions allowing for comparatively low wages, in turn, make it unappealing for employees to complete more than basic compulsory education.

Taken together, these two claims lead to the overall argument that firms in the same labour-market economy are provided with the same type of skills which, in turn, motivates firms to specialize in the same competitive strategy.³ Consequently, firms in economies with flexible labour markets like the UK are expected to engage mostly in RPI, while firms in rigid labour markets like Germany are said to specialize in IPI. Firms in economies like Italy, where collective agreements establish comparatively low minimum wage floors, presumably prefer LCP.

This reasoning creates a puzzle for the issue of competitiveness. Having claimed elsewhere that biotechnology constitutes a field ‘where radical innovation is important’ (Hall and Soskice, 2001, p. 44; see also Casper and Whitley, 2004), the literature has difficulties in explaining how an innovative biotech industry could develop in rigid economies like Germany or Italy (Pozzali, 2004; Ernst & Young, 2006). How can firms compete despite comparative institutional disadvantages? How can they pursue strategies that are not supported by national institutions?

This paper seeks to answer these questions. To this end, the paper first studies how many firms within the same economy pursue strategies of RPI, IPI, and LCP. Is it only an insignificant minority that deviates from pursuing the institutionally

²See Estevez-Abe *et al.* (2001, pp. 145, 149–155), Hall and Soskice (2001, pp. 24–27, 29–30), Lindbeck and Snower (2001a); see also Ohlin (1933, pp. 72–73); Porter, (1990, pp. 73–76) and Sinn (2005).

³For proponents of this argument, see Heckscher (1919, pp. 54–57); Ohlin (1933, pp. 12, 68–75); Estevez-Abe *et al.* (2001); Hall and Soskice (2001, pp. 36–44); Sinn (2005, pp. 56–59, 93). See also Porter (1990, pp. 67–68, 73–76), Lindbeck and Snower (2001a) and Franzese and Mosher (2002).

facilitated strategies? Finding this *not* to be the case, the paper furthermore analyses how firms succeed in competing despite comparative institutional disadvantages. In short, the paper finds that firms secure the required skills not only by relying on national labour-market institutions but also by using functional equivalents.⁴ More concretely, firms circumvent national rigidities by defecting from the economy's 'typical' institutions, for example, either by not installing works councils or by not adhering to national wage-bargaining agreements. Such defection, then, enables firms to secure alternative factors in an improvisational way, usually by concluding atypical labour contracts. These findings lead me to conclude that a Schumpeterian view of entrepreneurs as independent creators (see Schumpeter, 1934; 1939; 1947) is particularly instructive to understand how firms can compete despite comparative institutional disadvantages.

My arguments are based on both quantitative and qualitative analyses of pharmaceutical firms—including biotech, traditional pharmaceutical, and generics firms—in Germany, Italy, and the UK. The reasons for this empirical focus are twofold: Regarding the choice of *industry*, it is possible to identify the competitive strategies of pharmaceutical firms in a straightforward way due to the scientifically established notion of a New Chemical Entity (NCE) (see Section 2). Regarding the choice of *countries*, it is important to note that patent legislation and also pharmaceutical health and safety regulation are strict but homogeneous throughout the EU zone following the establishment of the European Medicines Agency in 1995 (Casper and Mataves, 2003, p. 1868; BAH, 2006; EMEA, 2006). Since the aim of this research project is to test the hypotheses of the competitiveness literature on how national institutions impact competitive strategies, legislative factors that influence corporate strategies need to be controlled for. Consequently, only pharmaceutical firms within the institutionally most different among the legislatively harmonized EU member states have been investigated. According to the competitiveness literature, those economies that offer the most facilitative institutions for the pursuit of RPI, IPI, and LCP strategies are the UK, Germany, and Italy.

The paper is organized as follows. Section 2 analyses the extent to which pharmaceutical firms in different economies specialize in the same competitive strategy. Finding that specialization patterns are not statistically significant, the remainder of the paper asks how firms in different labour markets can pursue the same variety of competitive strategies. To this end, Section 3 shows that firms actually require particular skill types for each competitive strategy, while Section 4 illustrates how firms secure the required skills in different labour-market economies. Section 5 concludes with a summary interpretation.

⁴In line with Streeck and Thelen (2005, p. 10), I understand institutions as 'formalized rules that may be enforced by calling upon a third party'.

2. One economy, one competitive strategy?

Let us begin by examining how strong firm preferences are toward pursuing the same competitive strategy within the same economy—as proclaimed by the competitiveness literature. To this end, we first need to identify different strategies. In line with the competitiveness literature, I understand a competitive strategy as a process that leads to the emergence of a good which, in turn, gives the producing firm a sustainable advantage on the market.⁵ Deductive reasoning combined with insights from the literature teaches us that a firm can obtain a sustainable advantage either from selling an *entirely new good* or from selling an *already existing product*. However, if the product is already known to the customer, it has to be either *of a better quality* or *cheaper* than rival products. Hence, a sustainable advantage results from selling a *radically new*, an *incrementally new* or a *cheaper standard good*. Accordingly, I distinguish between three competitive strategies: *RPI* based on the use of a radically new technology, *IPI* based on the use of an incrementally new technology and *LCP* based on the imitation of existing technologies.

This conceptual distinction can be applied in a particularly straightforward way to pharmaceutical firms⁶ in order to identify their competitive strategies due to the scientifically acknowledged notion of an NCE. An NCE simply constitutes a chemical entity which has not been discovered before. It is a scientific practice to indicate whether active or excipient ingredients of a pharmaceutical product constitute an NCE, a modification of an already discovered chemical entity or, simply, an imitation. Using the classification of pharmaceutical products according to the newness of their employed chemicals, I propose the following differentiation between competitive strategies (Bottazzi *et al.*, 2001,

⁵See Porter (1980, chapter 2); see also Heckscher (1919), Ohlin (1933, p. 7), Porter (1985, chapter 1), Lundvall (1992, p. 10), Casper (2001, pp. 397–401), Estevez-Abe *et al.* (2001, pp. 148–149); Hall and Soskice (2001, pp. 14–17) and Sinn (2005, pp. 18–19).

⁶The generic term of a ‘pharmaceutical firm’ is commonly used in the literature for any company that is active in the pharmaceutical industry. Accordingly, the firm is assigned to the industry on the basis of the *good* it produces: a pharmaceutical product. The distinction between a ‘biotechnology’, a ‘traditional pharmaceutical’, and a ‘generics firm’ refers to the *technological approach* of the pharmaceutical company in question. In this respect, *biotechnology firms* employ the most modern technology on the level of the cell and sub-cell to create industrially useful substances. While *traditional pharmaceutical firms* sometimes resort to biotechnological methods, they mostly use experimental and, thus, less deliberate approaches to drug design. Finally, *generics firms* are the least technology-intense as they do not engage in any research or clinical development activities, but rather imitate drugs as soon as their patent protection expires (Drews, 2000; Orsenigo *et al.*, 2001; Pammolli *et al.*, 2002; Muffatto and Giardina, 2003; Wittner, 2003). Throughout this paper, I use these commonly acknowledged definitions of pharmaceutical, biotech, traditional pharmaceutical and generics firms.

pp. 1162–1167). Pharmaceutical firms inventing drugs based on an NCE pursue RPI strategies, whereas firms improving already discovered chemical entities engage in IPI. Finally, firms which do not engage in R&D but rather focus on imitating innovations made by others pursue LCP strategies.

In identifying the competitive strategies of pharmaceutical firms in Germany, Italy and the UK, the PHID database offers the most complete empirical basis.⁷ It keeps track of 16 751 pharmaceutical projects carried out by 3522 firms and public research organizations in seven countries.⁸ These countries include Germany, Italy and the UK, in addition to France, Japan, Switzerland and the USA.⁹ In these countries, any firm is recorded as soon as it has been involved in at least one pharmaceutical project which has reached the stage of preclinical development since the 1980s. Therefore, firms whose pharmaceutical projects are/were not granted patent protection are also included in the database. Finally, pharmaceutical firms are considered only if their projects translated into therapeutic drugs for curing or treating human diseases. Firms that are active in the service sector, such as platform-technology suppliers, are not considered.

Importantly, a new drug is often not developed by a single firm. Instead, the process leading to the launch of a new product is characterized by a remarkable division of labour (Gambardella *et al.*, 2001, pp. 36–53). While biotech firms tend to specialize in upstream research activities, downstream development activities are typically taken over by traditional pharmaceutical firms (Bottazzi *et al.*, 2001; Orsenigo *et al.*, 2001; Owen-Smith *et al.*, 2002; Pammolli *et al.*, 2002). The PHID database takes this division of labour into account by distinguishing between *developers*, *licensors*, and *licensees* of pharmaceutical products. A *developer* is a firm with a fully integrated value chain carrying out all stages on its own. A *licensor*, by contrast, initiates a project which ultimately translates into a new drug. However, focusing on upstream activities (i.e. on discovery, preclinical and early clinical development), the licensor decides at a certain point to licence its discovery to another firm, which continues the drug development process. Accordingly, a *licensee* focuses on the stages of (late) clinical development, registration and marketing in order to translate the respective discovery into a marketable drug.

⁷The PHID database is constantly updated. All figures reported in the following refer to November 2004.

⁸The PHID database identifies the nationality of a firm according to the location of the firm's headquarters.

⁹To be precise, the PHID database covers 67 countries. However, the number of pharmaceutical projects registered in the remaining 60 countries is too limited to provide representative results.

This distinction makes it possible to identify RPI, IPI, and LCP strategists as follows:

- RPI strategists are *developers* or the *licensors* of pharmaceutical projects that translate into a drug based on an NCE. Since the discovery of the NCE is made by the licensor, the latter is *radically innovative*, irrespective of the stage at which it decides to out-licence the pharmaceutical project.
- Following this logic, a firm pursues an IPI strategy whenever it is the *developer* or *licensor* of a pharmaceutical project which improves a previously discovered chemical entity. In addition, a firm also pursues an IPI strategy if it *in-licences* a pharmaceutical project based on an NCE *at the stage of clinical development*. At that moment, the previously unknown chemical entity has been discovered. Accordingly, it is the task of the licensee to improve the entity in such a way that its effectiveness and dosage are optimized. In sum, both licensees of pharmaceutical projects at the development stage and developers or licensors of improved drugs pursue IPI strategies as they are not radically but *incrementally innovative*.
- This leaves us with a third group of firms in-licensing pharmaceutical projects with the aim of registering and marketing either radically or incrementally new drugs. These firms concur with generics firms in that they abstain from expensive research and development activities. Hence, their strategy consists in producing and selling drugs at the *lowest possible costs*.

Applying this sampling strategy to those British, German, and Italian pharmaceutical firms which have been involved in at least one pharmaceutical project since 1985¹⁰ leads to the results reported in Table 1.¹¹

Contrary to the expectations of the competitiveness literature, table 1 does not provide empirical support for the idea that the majority of firms in the same political economy specialize in the same competitive strategy. While 47.5% of pharmaceutical firms pursue an RPI strategy in the UK, 39.4% of firms pursue this strategy in Germany, and 34.5% of their counterparts do so in Italy. The IPI strategy, in turn, is pursued by 51.5% of German firms, by 37.9% of Italian firms, and by 42.5% of British firms. Finally, the probability that firms pursue an LCP strategy is 27.6% in Italy, 10.0% in the UK, and 9.1% in Germany. In other words, the obtained strategy patterns are very similar for the UK, Germany, and Italy. Interestingly, though, table 1 also reports that firms in different

¹⁰Given that it takes on average 14 years to develop a pharmaceutical product (Muffatto and Giardina, 2003, pp. 108–109), I have limited the sample to the last 20 years in order to cover a sufficiently long time span while eliminating outdated results.

¹¹More detailed information on the corporate sample obtained can be provided by the author upon request.

Table 1 Summary results: RPI, IPI, and LCP strategists in the UK, Germany, and Italy

	Radical product innovators		Incremental product innovators		Low cost producers		Total	
	No. of firms	firms (%)	No. of firms	firms (%)	No. of firms	firms (%)	No. of firms	firms (%)
UK	19	47.5	17	42.5	4	10.0	40	39.2
Germany	13	39.4	17	51.5	3	9.1	33	32.4
Italy	10	34.5	11	37.9	8	27.6	29	28.4
Total	42		45		15		102	100.0
Average	14	41.2	15	44.1	5	14.7	34	
Above average		6.3		7.4		12.9		

Source: PHID database, sampled in November 2004.

economies show slight preferences for one strategy. British firms are 6.3% more likely to engage in RPI than the average pharmaceutical firm included in the sample. Similarly, the probability of pursuing an IPI strategy is 7.4% higher for a German firm than for the sample's average company. Finally, Italian firms show a preference for LCP, as they pursue this strategy 12.9% more often than the average pharmaceutical company. Yet, a Chi-Square test, assessing the strength of association between a firm's *location* and the probability that a specific *strategy* is pursued, shows that differences in specialization patterns are too weak to produce statistically significant results [$\chi^2 = 5.996$ (2 cells = 22.2 % with expected count less than 5); $P > 0.10$; Cramer's $V = 0.171$; $P > 0.10$]. These analyses are puzzling to proponents of the specialization argument as they indicate that neither the majority nor a plurality of firms pursues the same competitive strategy within the same economy. This raises the central question: how can firms pursue strategies that are not supported by national institutions?

3. One competitive strategy, one type of employee skills?

How can firms compete despite comparative institutional disadvantages? Seeking to shed light on this question, the remainder of this paper empirically tests the link between national labour-market institutions, the provision of skills and their importance for different competitive strategies. In doing so, the present section studies whether each competitive strategy actually requires particular types of skills. Should it turn out that firms can pursue the same strategy by relying on diverse skill types, then the fact that rigid and or flexible labour markets motivate employees to acquire diverse skills would simply be irrelevant for the pursuit of the respective strategies.

To develop hypotheses as to why different skill types facilitate RPI, IPI, and LCP strategies, it is first necessary to clarify the concepts of *specific* and *general skill profiles* on the one hand and *high* and *low skill levels* on the other. To begin with the latter dyad, contributors to the competitiveness literature (e.g. Soskice, 1999, p. 108; Estevez-Abe *et al.*, 2001, p. 176; Hall and Soskice, 2001, pp. 25–26) offer useful advice as they repeatedly point out that the German vocational training system provides workers with high skill levels. In line with this conception, *low skills levels* are understood here as the completion of compulsory schooling only, while *high skill levels* are defined as both secondary vocational and tertiary education.

As for the conceptualization of different skill profiles, Becker makes an insightful distinction by suggesting that specific skills are useful only within the context of a single firm (Becker, 1975, pp. 26–27). Employees acquire these skills by working for the same firm for a prolonged period of time and by receiving specific training, which ‘increases the future marginal productivity of workers [only] in the firm providing it’ (Becker, 1975, p. 19). General skills, in contrast, are defined as those skills that employees can use within the context of all firms in which a certain business function is required (Becker, 1975, pp. 19–20). Hence, employees acquire these skills by frequently changing employment and by receiving ‘general training [which] increases the marginal productivity of trainees by exactly the same amount in the firms providing the training as in other firms’ (Becker, 1975, p. 26).

While this distinction is highly consistent at a theoretical level, it is in practice hard to find employees that have either completely specific or completely general skills. Furthermore, Estevez-Abe *et al.* (2001, p. 148) point out that, in addition to specific or general skills, employees can hold a third skill profile, namely industry-specific skills. Following the above reasoning of Becker, these skills are useful in all firms of the same industry. They are typically acquired through apprenticeship and vocational schools and, therefore, increase the marginal productivity of trainees in all firms which are active in the industry of the firm providing training, but they do not increase the trainees’ productivity in firms outside this industry.

Seeking to balance these theoretical and practical concerns, *specific skills* are understood here as narrowly employable skills, typically a mixture of firm- and industry-specific skills, which are not transferable across industries as they are acquired through apprenticeship and vocational training programmes. General skills, in contrast, are defined as widely employable skills that are transferable across industries as they are acquired through further education programmes other than apprenticeship or vocational training.

How do these skill profiles facilitate RPI, IPI, and LCP strategies? To begin with IPI, various contributors to the competitiveness literature suggest that this strategy requires employees with high-level and specific skills (Estevez-Abe

et al., 2001, pp. 174–175; Hall and Soskice, 2001, pp. 25–26, 39; see also Lindbeck and Snower, 2001a; Sinn, 2005, pp. 18–19, 93). On the one hand, workers need high skill levels in order to use and maintain sophisticated machines and to perform complex (assembly) tasks. Specific skills, on the other hand, are necessary because the in-depth knowledge of the company, its market, suppliers and customers enables employees to continuously improve products and production processes and to adopt products to specific customer needs. Furthermore, employees with an in-depth understanding of how their firm operates are able to work autonomously and to take on responsibility. They know, for example, how to rectify mistakes that occur during the production process, which, in turn, contributes to maintaining a high level of product quality.

High-level and general skills, in contrast, are said to be necessary for RPI strategies (Estevez-Abe *et al.*, 2001, pp. 174–175; Hall and Soskice, 2001, pp. 40–41; see also Lindbeck and Snower, 2001a). To come up with entirely new ideas, employees need to be highly skilled and understand how certain technologies or industrial processes work. General skills are additionally required because employees can adapt more easily to a constantly changing environment, which, in turn, is characteristic of the pursuit of an RPI strategy.

Finally, the pursuit of an LCP strategy is said to rely on low-skilled employees with basic compulsory education because such employees are comparatively inexpensive.¹² Even though employees with low-level skills often cannot rectify mistakes that occur during the production process without precise instructions from their superiors, this does not harm the pursuit of LCP strategies, as product quality is less important than product costs.

This reasoning makes it possible to derive three sets of testable hypotheses on the importance of different skill types for competitive strategies:

H1:

- (a) High-level and
- (b) general skills facilitate the pursuit of RPI strategies, whereas

H2:

- (a) high-level and
- (b) specific skills form the basis of IPI.

H3:

- (a) While employees with low-level skills are essential for LCP strategies,
- (b) this strategy requires neither specific nor general skill profiles.

¹²For proponents of this argument, see Estevez-Abe *et al.* (2001, pp. 175–176) and Hall and Soskice (2001, p. 44); see also Ohlin (1933, pp. 12, 69), King and Wood (1999, p. 376) and Sinn (2005, pp. 31–33).

To understand *how* important these skill types are for RPI, IPI, and LCP strategies, it is necessary to assess not only their absolute but also their relative explanatory power, because it is not uncommon that an initially strong explanation turns out to be insignificant as soon as a rival hypothesis is tested. Various studies indicate that the age of firms constitutes a particularly strong explanation for why firms pursue different strategies. As demonstrated by strategic management scholars, in general (Levitt, 1965; Klepper and Graddy, 1990; Utterback, 1994; Klepper and Simons, 1997; Walker, 2003, chapter 4), and Utterback (1994) in particular, radically new innovations rarely come from incumbent firms. Instead, they are frequently proposed by small and comparatively young (start-up) companies which are outsiders to the industry. The reason for this is that radical innovation often makes existing products obsolete. Incumbent firms have therefore little interest in pursuing a strategy which accelerates the decline of their own products (Utterback, 1994, pp. 90–101, 160–165, 223–236). Thus, young corporate age seems to facilitate RPI because young companies usually have few or no products that risk becoming obsolete if a radically new innovation is made. The opposite holds true for the pursuit of IPI and LCP strategies. Thus, to assess the relative importance of particular finance types for competitive strategies, the rival hypothesis to be tested is the following.

H4:

- (a) Young corporate age is conducive to the pursuit of an RPI strategy, whereas
- (b) advanced corporate age promotes both IPI and
- (c) LCP strategies.

The remainder of Section 3 will be dedicated to testing these hypotheses at the micro level. To this end, Section 3.1 employs a measure that reflects both skill levels and profiles at the same time, while Section 3.2 uses an indicator that captures only particular skill profiles. The data on which these sections are based were gathered by carrying out structured interviews with Human Resources (HR) managers in 69 of those firms whose competitive strategy I identified in Section 2. Importantly, these interviews, carried out between March 2004 and May 2006, provided me with quantitative data and qualitative insights which were crucial for structuring and interpreting the following analyses. Statements made by 25 of the overall 69 interviewees form the qualitative basis of the arguments I propose in Sections 3 and 4. For reasons of confidentiality, I refer to these interviews with two or three initial letters abbreviating the country in which the interview was carried out ('Ger' for Germany; 'It' for Italy; and 'UK' for the United Kingdom), combined with an abbreviation of the strategy pursued by the interviewee's firm and a figure indicating the number of interview.

It should also be noted that Section 3 reports the results I obtained from analysing the overall dataset of 69 pharmaceutical firms. However, I cross-checked these results by rerunning all analyses for each country separately. While the number of cases per county was sometimes too small to provide statistically significant results, they confirmed the overall findings. One and, more importantly, the same skill type systematically turned out to be more important than the others for pursuing the competitive strategy under investigation, irrespective of the country in which the observed firms were based. Since country-specific analyses are in line with the findings based on the overall sample, only the latter are reported in the following sections.

3.1 *Why skill levels are less important for different strategies*

The above conceptualizations suggest that the educational attainment of employees, i.e. the highest degree of education they have completed, constitutes an ideal proxy for their skill types, as this indicator captures skill levels and profiles at the same time. As for the skill levels, employees who have completed compulsory schooling can be said to be low skilled, whereas employees with a secondary vocational or tertiary education are highly skilled. As for the skill profiles, employees with a tertiary education can be said to have general skills, while employees with a secondary vocational education have specific skills. The part of the workforce with a basic compulsory education, presumably, has neither general nor specific skills.

If the above hypotheses hold true, we should find that a significant share of employees in RPI firms holds a degree at the level of tertiary education, whereas the workforce of IPI pursuers mostly hold degrees at the level of secondary vocational education, and people employed in LCP firms often have not completed more than compulsory schooling. To gather information about the skill levels of their firm's workforce, HR managers were asked to specify the percentage of employees who have completed compulsory schooling, who hold a degree at the level of secondary vocational education and who hold a degree at the level of tertiary education, respectively.¹³ Table 2 provides an overview of the answers obtained, detailing them by competitive strategy and country.

¹³During interviews with HR managers, these levels of educational attainment were defined as follows:

–*Employees with basic compulsory education* have left education after the minimum number of schooling years required by law. Also, those employees who have completed *secondary, but non-vocational education* were counted as employees with basic compulsory education as they acquire neither advanced general nor specific skills.

–*Employees with secondary vocational education* have completed education with a certificate in vocational training.

–*Employees with tertiary education* have completed education with a university degree or comparable higher education.

Table 2 Skill levels of workforces employed by RPI, IPI and LCP strategists

Group of firms	No. of cases	Employees with basic compulsory education (%)	Employees with secondary vocational education (%)	Employees with tertiary education (%)	Total
RPIs UK	7	12.2	14.7	73.1	100
IPIs UK	8	29.2	17.8	53.0	100
LCPs UK	4	43.7	25.8	30.5	100
RPIs Germany	6	4.5	23.7	71.8	100
IPIs Germany	11	4.5	59.4	36.1	100
LCPs Germany	9	5.6	62.1	32.3	100
RPIs Italy	7	11.9	31.6	56.5	100
IPIs Italy	10	13.2	37.0	49.8	100
LCPs Italy	4	6.3	40.0	53.7	100
RPIs overall	20	9.8	23.3	66.9	100
IPIs overall	29	14.3	40.2	45.5	100
LCPs overall	17	14.7	48.4	36.9	100
Total	66	13.0	37.2	49.8	100

Source: own calculations based on 66 interviews with HR officers in British, German, and Italian pharmaceutical firms.

Two particularly noteworthy observations can be made on the basis of table 2. First, country-specific variations can be observed in the *absolute* extent to which RPI, IPI, and LCP pursuers employ particular skill types. As interviews with several HR managers indicated, these variations seem to result from differences in how vocational training programmes are designed in Germany, Italy, and the UK (UkRPI1; GerRPI4; ItDQP1; UkdQP3; ItRPI3). Importantly, British, German and Italian education systems alike offer vocational training courses which provide the enrolled trainees with nationally recognized qualifications required for skilled trade professions. The vocational training to be completed in order to obtain such qualifications is particularly well developed and established in Germany. Here, the dual system (*Duales System*) foresees at least two years of professional education provided by vocational colleges (*Berufsschulen*) in collaboration with firms (OECD, 1995, pp. 276–278; Gries *et al.*, 2005, pp. 17–19). While nationally recognized ‘National Vocational Qualifications’ (NVQs) can also be obtained in the UK, the training programmes leading to these awards are less well established (EIRO, 2004b; EMIRE, 2007). Unlike in Germany, training is not necessarily provided by specialized vocational colleges, but can also be provided by general education colleges and institutes of higher education which, moreover, are often private and thus not free of charge (EIRO, 2002; Gries *et al.*, 2005, pp. 32–34). Most importantly, though, the collaboration between the providers of vocational education and firms is not

institutionalized, so that British trainees tend to receive less specific preparation for their professional career. Akin to the UK, vocational schools in Italy do not systematically collaborate with firms when providing professional education. However, the educational course to be pursued in order to obtain a training qualification is well established as it is provided by specialized colleges (*istituti tecnici* and *istituti professionali*) which are usually public and, hence, free of charge (OECD, 1995, pp. 286–288; Gries *et al.*, 2005, pp. 41–43). Due to Italy's centralized bargaining system, these *istituti* can also offer comparatively sophisticated training courses (Hancké and Herrmann, 2007). These differences in the British, German, and Italian education systems seem to explain why the absolute availability of employees with secondary vocational skills and, hence, the employed workforce holding these skills varies from one country to another.

The second, particularly revealing, observation to be made on the basis of table 2 is that, despite country-specific variations in the *absolute* skill types employed, certain types seem to be *relatively* more important for one strategy than for the two others. More concretely, IPI and LCP strategists in all three countries seem to pursue similar employment policies as they rely particularly on high shares of workers not only with secondary vocational training but also with a tertiary education, whereas RPI pursuers mostly employ people with a tertiary education. People with a basic compulsory education constitute the smallest group of employees in most firms, irrespective of the strategy they pursue or the country they are based in. It almost seems as if RPI, IPI, and LCP pursuers try to avoid employing people with this education level. While these observations seem to confirm hypotheses H1a and H1b, they cast doubt not only on hypotheses H2a and H2b but, even more importantly, on hypotheses H3a and H3b.

To test the statistical robustness of these observations, six sets of multinomial logistic regression analyses were carried out. While the first three sets assessed the absolute impact of *minimum*, *secondary*, and *tertiary education* (as the model's respective independent variable) on *competitive strategy* (as the model's dependent variable), the second sets tested the relative importance of these three education types by regressing *each type* together with *corporate age* (independent variables) on *competitive strategy* (dependent variable). Interestingly, the directional indicators, the strengths of association and the scores of statistical significance obtained from the first three sets of analyses hardly changed when corporate age was added as a control variable in the second three sets. Table 3 therefore reports only the results obtained from the second sets of multinomial regression analyses, i.e. those regressions testing the relative explanatory power of tertiary (model 1), secondary (model 2), and basic compulsory (model 3) education together with corporate age.

The results reported in Table 3 confirm the observations made on the basis of Table 2. In line with hypotheses H1a and H1b, model 1 shows that RPI strategists

Table 3 Importance of educational attainment for RPI, IPI, and LCP strategies (results of multinomial logistic regression analyses: exponential B)

Model	1			2			3		
	IPI RPI	LCP IPI	RPI LCP	IPI RPI	LCP IPI	RPI LCP	IPI RPI	LCP IPI	RPI LCP
Independent variables									
Tertiary education	0.968*	0.970*	1.065***						
Secondary vocational education				1.023	1.029*	0.949**			
Basic compulsory education							1.018	0.999	0.983
Corporate age	1.017	0.992	0.991	1.023*	0.990	0.987	1.029***	0.996	0.976**
<i>n</i>		66			66			66	
<i>R</i> ² <i>N</i> _{Nagelkerke}		0.332			0.289			0.198	

Significance levels: * < 0.10; ** < 0.05; *** < 0.01. Constant not reported in table.

employ significantly more people with a tertiary education than both IPI and LCP pursuers. When controlled for corporate age, a 1% increase in the tertiary education of a firm's workforce leads to an increase in the odds of the firm being an RPI rather than an IPI strategy by 3.2% ($1 - 0.968 = 0.032$), while the odds of the firm pursuing an RPI rather than an LCP strategy increase by 6.5%. This supports the claims of hypotheses H1a and H1b that a workforce with high and general skills is required for RPI. However, model 2 casts doubt on hypotheses H2a and H2b, which state that high-level and specific skills are necessary for IPI, because LCP pursuers employ more workers with secondary vocational training than IPI strategists. Controlled for a firm's age, a 1% increase in the secondary education of its workforce increases the likelihood of this firm being an LCP rather than an IPI strategist by 2.9%. If they have any effect at all, employees with high-level and specific skills thus seem to facilitate LCP rather than IPI. Finally, model 3 illustrates that—when controlled for corporate age—neither RPI, nor IPI, nor LCP strategists employ workers with a minimum education to a statistically significant extent. This calls hypotheses H3a and H3b into question as empirical evidence does not support the idea that LCP strategists require a low-skilled workforce.

How are we to understand these results? Interviews with HR managers suggest the following interpretation: firms that specialize in research and development activities typically require a high number of scientists who, usually, hold university degrees. This explains why RPI strategists that focus on early value-chain activities substantially rely on employees with a tertiary education. Contrary to RPI pursuers, IPI firms do not focus on research and development activities, however, but rather carry out downstream activities such as production, marketing, and sales. Accordingly, IPI strategists employ relatively fewer scientists, managers, and department heads with a tertiary education, as they also need production and sales employees with a secondary and, occasionally, minimum education.

The reason why—most notably, German and Italian—LCP strategists with a focus on production, marketing, and sales activities do *not* employ more 'inexpensive' workers with a basic compulsory education is not, however, related to the value-chain focus of low-cost producers. Instead, the most important reason for this limited employment of low-skilled workers is that highly skilled employees are highly productive! When HR managers of German and Italian LCP strategists were asked whether a workforce with high education would not constitute an undesirable cost burden, their answers indicated the opposite. Skilled and 'expensive' employees were usually perceived as more beneficial because they are able to work autonomously, so that they are more productive than employees with low skill levels who require constant supervision (ItLCP1; GerLCP1; GerLCP2; GerLCP3; ItLCP2). Interestingly, this idea was also confirmed by HR managers from British LCP firms. Instead of perceiving

a low-skilled workforce as an inexpensive benefit for the pursuit of an LCP strategy, HR managers repeatedly deplored the shortage of workers with a secondary vocational education in the UK (EIRO, 2004b). Accordingly, British HR managers agreed that they were willing to pay higher wages for employees with higher skill levels, as the latter are usually more productive (UkRPI1; UkDQP3; UkLCP1; UkLCP2). This contributes to the explanation of why not only LCP strategists, but also RPI and IPI pursuers, show a preference for *not* employing people with only a basic compulsory education.

The finding that a balance exists between workers' level of education and their productivity is unsurprising to the extent that a firm's cost competitiveness is usually measured by its unit labour costs, i.e. the ratio between the wage or salary of employees and their unit output (OECD, 2007). In other words, cost competitiveness is not determined by absolute wage levels, but by wage levels relative to workers' performance. Hence, firms—including low-cost producers—can well afford to pay employees high wages if the latter are appropriately productive. And employees are appropriately productive if they are adequately skilled. A balance thus seems to exist between the educational level of employees and their productivity on the one hand and their wage levels on the other. The higher the education level, the more productive the employees are and the higher the wages are that they can duly claim.

This balance indicates that skill *levels* do not have a significant impact on the pursuit of different strategies. Consequently, hypotheses H1a, H2a and H3a on the importance of high and low skill profiles for RPI, IPI, and LCP strategies can be discarded. Given, however, that RPI pursuers rely so notably on employees with university education, while workers with secondary vocational training seem to be especially important for IPI strategists, it could be possible that particular skill *profiles* are required for these strategies. The importance of general and, correspondingly, specific profiles may, however, not have emerged fully from the above analyses, because 'educational attainment' constitutes a proxy for skill levels and profiles alike. To assess hypotheses H1b, H2b, and H3b, it is thus necessary to use a proxy that only reflects the skill profiles of employees.

3.2 *Why skill profiles facilitate RPI and IPI strategies*

To measure skill profiles at the micro level,¹⁴ I composed a new indicator on the basis of the interviews conducted which combines those factors that the

¹⁴Contrary to micro-level assessments of skill profiles (see, for example, Iversen and Soskice, 2001, pp. 881–883), studies that measure skill profiles on the basis of macro-level data are more frequent, yet less fine-grained and, hence, less insightful for the purpose of our analyses (see, for example, Patel and Pavitt, 1994, p. 90; Estevez-Abe *et al.*, 2001, p. 170).

competitiveness literature considers crucial for employees in order to acquire specific skills: employment tenure (Estevez-Abe *et al.*, 2001, pp. 145, 150–151; Hall and Soskice, 2001, pp. 27, 41; Lindbeck and Snower, 2001b, p. 183), vocational training (Hall and Soskice, 2001, pp. 25, 30) and on-the-job training (Lindbeck and Snower, 2001a). Since these factors were added up to form one ‘skill specificity indicator’, the ‘skill generality index’ was derived from the specificity index by assigning it the reversed scores. To avoid repetition, I will only describe below how the specificity indicator was composed.

Overall, I assigned up to 5 points to each interviewed firm on the basis of the three aforementioned criteria. Hence, I first credited up to 2 points according to the firm’s *average job tenure*. Whenever job tenure was lower than four years, I awarded 0 points, assuming that employees do not work long enough for the same firm to develop specific skills. 1 point was assigned for job tenure between 4 and 7.9 years. And 2 points were allocated for average tenure of more than eight years, because such long-term employment presumably allows employees to gain an in-depth understanding of how their firm operates.¹⁵ Second, I considered the extent to which companies *employ former trainees*. In doing so, I allocated no points to firms which do not offer (vocational) training to young people during their education. Similarly, no points were allocated to firms that offer (vocational) training without aiming to employ trainees at the end of their educational programme. In these cases, firms can be assumed to use trainees as a source of inexpensive labour rather than take the opportunity to educate future employees in specific skills. Consequently, I assigned 1 point to firms whenever they employed former trainees at the end of their (vocational) education period. The third criterion I considered was the *annual on-the-job training* provided by a firm. Whenever less than 50% of a firm’s employees received on-the-job training, or whenever more than 50% participated in on-the-job training courses that equipped them mostly with *general* skills, 0 points were assigned. 1 point was attributed if at least 50% of a firm’s employees received on-the-job training for acquiring mostly *industry-specific* skills. Finally, 2 points were allocated to those firms where at least 50% of the workforce participated in on-the-job training courses that provide mostly *specific* skills.

Table 4 provides an overview of the extent to which RPI, IPI, and LCP strategists rely on employees with specific and general skills, respectively. Interestingly, and contrary to table 2, table 4 does not report noteworthy country-specific

¹⁵The reason for having chosen 4 and 8 years as thresholds is that the first and second promotions usually take place within these time spans, and an employee’s decision to switch companies is often significantly influenced by a firm’s attitude towards promotion. However, interviews also revealed that employees are less likely to leave a firm the longer they work for it. For this reason, further thresholds (e.g. 12 years) were not introduced.

Table 4 Skill profiles employed by RPI, IPI, and LCP strategists^a

Group of firms	No. of cases	Skill specificity (the higher the score, the more specific the skills)	Skill generality (the higher the score, the more general the skills)	Total (maximum score obtainable)
RPIs UK	7	1.4	3.6	5
IPIs UK	8	3.4	1.6	5
LCPs UK	4	2.0	3.0	5
RPIs Germany	7	1.7	3.3	5
IPIs Germany	12	3.7	1.3	5
LCPs Germany	9	3.1	1.9	5
RPIs Italy	7	1.7	3.3	5
IPIs Italy	10	3.7	1.3	5
LCPs Italy	4	2.3	2.7	5
RPIs overall	21	1.6	3.4	5
IPIs overall	30	3.6	1.4	5
LCPs overall	17	2.6	2.4	5
Total	68	2.7	2.3	5

Source: own calculations based on 68 interviews with HR managers in British, German, and Italian pharmaceutical firms.

^aThe specificity and generality index rank skill profiles of employees on a scale from 0 to 5.

variations. Firms pursuing the same strategy seem to employ the same mixture of skill profiles, irrespective of the country in which they are based. Furthermore, the results of table 4 indicate support for hypotheses H1b, H2b, and H3b in that RPI strategists importantly rely on employees with general skills, whereas IPI pursuers employ workforces with specific skills. Low-cost producers, in turn, are situated in between, as they recruit employees who have neither general nor specific skills.

To assess the statistical robustness of these observations, I carried out three sets of multinomial logistic regression analyses. In doing so, I expanded the '0 to 5 scale' in which skill profiles were originally measured to a '0 to 100 scale' in order to improve the interpretability of the results obtained.¹⁶ Since the specificity index assumes the reversed scores of the generality index, the results obtained are the same for the two indices, except for the directional measures which assume opposite values. To avoid repetition, only the specificity indicator was therefore used in the three sets of multinomial logistic regression analyses. In the first two sets (models 1 and 2), *skill specificity* and *corporate age* were regressed separately (as the respective independent variable of each model) on *competitive strategy* (dependent variable), so as to test the individual explanatory power of

¹⁶This was done by multiplying all original values by a factor of 20.

both variables.¹⁷ Model 3 then assesses the relative importance of *skill specificity* and *age* (independent variables) by regressing them jointly on *competitive strategy* (dependent variable).

Table 5 reports the results obtained. They confirm the observations made on the basis of Table 4 and, hence, the propositions of hypotheses H1b, H2b, and H3b that particular skill profiles have a significant impact on RPI, IPI, and LCP strategies. To begin with RPI, models 1 and 3 reveal that this strategy relies heavily on general skills. More precisely, model 3 shows that—when controlled for corporate age—a 1% decrease in the specificity or a 1% increase in the generality of skills held by a firm's workforce raises the likelihood that this firm pursues an RPI rather than an IPI strategy by 12.1%. At the same time, it raises the probability that the firm pursues an RPI rather than an LCP strategy by 4.8% ($1 - 0.952 = 0.048$). These results indicate support for hypothesis H1b, which states that that general skills are required for RPI. By the same token, models 1 and 3 show that IPI strategists substantially employ people with specific skills. Even when controlled for corporate age (see model 3), a 1% increase in the skill specificity of a firm's employees leads to an increase in the odds of this firm being an IPI rather than an RPI strategist by 12.1%, while the odds of the firm being an IPI rather than an LCP strategist increase by 6.3% ($1 - 0.937 = 0.063$). These results also indicate support for hypothesis H2b, which states that that employees with specific skills are at the basis of IPI. It is finally noteworthy that the employment policy of LCP pursuers differs significantly from that of RPI and IPI strategists. Consequently, model 3 shows that a 1% decrease in the generality or a 1% increase in the specificity of the skills held by a workforce increases the probability that the employing firm pursues an LCP rather than an RPI strategy by 4.8% ($1 - 0.952 = 0.048$). Similarly, a 1% decrease in the specificity or a 1% increase in the generality of the skills held by a workforce increases the likelihood that the employer is an LCP rather than an IPI strategist by 6.3% ($1 - 0.937 = 0.063$). Taken together with the observations in Table 4, this finding indicates that employees of LCP pursuers hold neither specific nor general skills, which, in turn, supports hypothesis H3b.

The impact of different skill profiles on RPI, IPI and LCP strategies is so strong that even the explanatory power of corporate age, the strongest rival explanatory variable, becomes statistically insignificant as soon as the two measures are regressed jointly in model 3. Model 2, which only considers the individual impact of corporate age on competitive strategies, still provides empirical support for the hypothesis that young age facilitates RPI strategies (H4a), whereas mature corporate age is conducive to IPI and LCP strategies (H4b and

¹⁷Distinguishing between three discrete categories, the strategy variable assigns a value of '1' to any firm that pursues an RPI strategy, a value of '2' to any IPI pursuer and a value of '3' to any LCP strategist.

Table 5 Importance of skill specificity and corporate age for RPI, IPI, and LCP strategies (results of multinomial logistic regression analyses: exponential B)

Model	1			2			3		
	IPI RPI	LCP IPI	RPI LCP	IPI RPI	LCP IPI	RPI LCP	IPI RPI	LCP IPI	RPI LCP
Independent variables									
Skill specificity	1.126***	0.940***	0.945***				1.121***	0.937***	0.952**
Corporate age				1.033***	0.996	0.972**	1.008	1.003	0.989
<i>n</i>		68			69			68	
$R^2_{\text{Nagelkerke}}$		0.529			0.204			0.539	

Significance levels: * < 0.10; ** < 0.05; *** < 0.01. Constant not reported in table.

H4c). For each additional year a firm exists, the odds of it pursuing an IPI rather than an RPI strategy increase by 3.3%, whereas the odds of a firm pursuing an LCP rather than an RPI strategy increase by 2.8% ($1 - 0.972 = 0.028$). Given, however, that the explanatory power of corporate age becomes insignificant as soon as the skill variable is introduced as an additional predictor of competitive strategy in model 3, it can be deduced that particular skill profiles constitute necessary input factors—and, possibly, more important input factors than corporate age.

In sum, the analyses of Section 3 have shown that the balance between the educational attainment of employees and their productivity means that particular education *levels* do not facilitate RPI, IPI, and LCP strategies. This is different for skill *profiles* in that general skills are required for RPI, while specific qualifications are necessary for IPI strategies. LCP strategies, in turn, are not affected by particular requirements for specific skill profiles as they can be pursued with a discretionary mixture of both skill types.

4. One type of employee skills per political economy? How firms compete despite comparative institutional disadvantages

The importance of different skill profiles for RPI and IPI strategies raises one crucial question. If the competitiveness literature is right that rigid and flexible labour-market institutions offer comparative advantages for IPI and RPI strategies, respectively, because they motivate employees to acquire either specific or general skills, how can firms compete in institutional environments that constitute comparative disadvantages? How can RPI strategists in rigid labour-market economies secure employees with general skills? And how do IPI pursuers in flexible labour markets motivate employees to acquire specific skills? Section 4 seeks to answer these questions. In doing so, Section 4.1 focuses on the comparative advantages and disadvantages resulting from national labour-market institutions for *RPI*, while Section 4.2 concentrates on the institutional advantages and disadvantages for *IPI*.

4.1 Hiring employees with general skills in rigid labour markets

How do RPI strategists in flexible and, more importantly, in rigid labour markets secure employees with general qualifications? Interestingly, interviews with HR managers in the UK confirmed the argument of the competitiveness literature that the flexible labour-market institutions of this economy offer important comparative advantages for RPI strategists, as they motivate employees to acquire general qualifications. More concretely, a decentralized bargaining system is an essential reason why the vocational training system is less well

developed in the UK (UkDQP4)—with the result that adolescents find it easier to invest in general education. Furthermore, weak works councils and short notice periods promote the acquisition of general skills in that employees tend to change employment more often. As a result, average job tenure in the British RPI firms interviewed is rather low, namely 4.2 years.

Interestingly, though, average job tenure is not much higher in German and Italian RPI firms, namely 5.7 and 6.0 years, respectively. And, as table 4 has illustrated, RPI employees do hold general skills as well. How can RPI employers acquire a workforce with general qualifications in these countries given that they are often portrayed as ideal-typical examples of rigid labour-market economies? How do RPI firms compete in the face of comparative institutional disadvantages? In a nutshell, interviews with German and Italian HR managers indicate that RPI firms can circumvent national constraints by defecting from the typical labour-market institutions. When HR managers were asked whether a centralized wage-bargaining system was important to their wage-setting policy, they usually denied that this was the case. In Germany, the broad majority of RPI strategists (namely 86% of all RPI firms interviewed) are not *tarifgebunden* (i.e. adhering to the system of collective bargaining). Instead of paying their workforce according to salary levels determined in industry-wide collective agreements, German RPI strategists set wages on an individual basis with employees. In Italy, by contrast, all firms in an industry must pay their employees at least the salary determined in the *Contratto Collettivo Nazionale di Lavoro* (CCNL). However, the CCNL only determines the minimum remuneration that has to be disbursed. Employers can, and do, pay wages above the CCNL wage floor. Accordingly, the majority of Italian RPI pursuers (namely 57% of all RPI firms interviewed) also negotiate wages on an individual basis with their employees instead of paying company-wide wage top-ups. It is further interesting to note that, in order to determine adequate salary levels, RPI strategists in both Germany (43%) and Italy (71%) draw substantially on the insights provided by industry-wide income surveys—as do RPI strategists in the UK (71%). Overall, these insights suggest that a centralized wage-bargaining system does not prevent employers in rigid labour markets from setting wages according to their company's needs.

In a similar vein, the constraints resulting from labour-market institutions such as works councils, notice periods, and competition clauses are also more limited than one might expect from the competitiveness literature. As for competition clauses, interviews revealed that their use is generally more widespread in the UK than in Germany and Italy. In the two latter countries, legal notice periods are comparatively long and usually perceived as adequate when it comes to finding a suitable replacement for key employees. Since particular notice periods are not provided by British labour law, British firms often use competition clauses to ensure that they will have sufficient time to find a

suitable replacement, should key employees wish to leave their firm. Given that competition clauses are generally less diffused in Germany and Italy, it may not be surprising to learn that German and Italian RPI strategists in particular hardly write these clauses into employment contracts. Furthermore, HR managers in Germany and Italy do not perceive long notice *periods* to be an obstacle when wanting to lay off employees. If at all, it was the limited number of *reasons* for which employees in Germany and Italy can lawfully be dismissed that was sometimes perceived as constraining (GerRPI2; GerDQP1; ItRPI3). This is particularly true since German and Italian works councils have an important say in dismissal. Accordingly, they can make sure that these reasons are respected meticulously.

That said, it is particularly revealing that only a limited number of the German RPI strategists interviewed (14%) actually had works councils in place, because communication between managers and subordinates in these often rather small firms is usually so well-developed that employees had not asked for a works council to be installed. The majority of Italian RPI pursuers (71%), in contrast, had installed works councils, usually because they had passed the threshold of employees above which they are required by law to put a works council in place. Interestingly, though, works councils in these firms were usually perceived as beneficial and an important means of communication between employers and employees (e.g. GerRPI2; GerRPI3; GerRPI1; ItRPI3; GerRPI6; ItRPI1). And even in those rare instances where larger RPI strategists had (to have) works councils and wanted to dismiss employees for reasons not recognized by law,¹⁸ works councils were hardly perceived as severe constraints. The reason for this is that, in such cases, it seems to be in the common interest of employers and employees to find a compromise, because lawsuits are costly, tedious, and potentially harmful to both the firm's and the employee's reputation. Depending on the individual relationship between managers and the respective works council, the latter was thus not necessarily seen as an obstacle but as a beneficial mediator (see ItRPI2; GerRPI5).

In sum, interviews with HR managers of German and Italian RPI strategists revealed that the interviewees perceive rigid labour-market institutions as less constraining than the competitiveness literature claims. A centralized wage-bargaining system, competition clauses, and long notice periods do not force RPI employers to offer long job tenure. While it is true that limited possibilities for dismissal, in combination with strong works councils, militate *de jure* against short job tenure, they rarely oblige RPI strategists *de facto* to retain employees against the firm's will.

In addition, interviews also indicated that contributors to the competitiveness literature seem to underestimate the creativity with which RPI pursuers in rigid

¹⁸That is, for reasons other than serious economic constraints or the willful misconduct of an employee.

labour markets circumvent national constraints and secure employees with general skills. On the one hand, RPI firms teach their employees general skills by offering on-the-job training courses, for example, in regulatory affairs, in relevant research areas, or in the field of corporate finance. On the other hand, given that German and Italian labour law makes the temporary employment of *workers* difficult, RPI strategists in these countries find a variety of ways to hire temporary *collaborators*. Most importantly, they cooperate closely with universities and public research institutes, by offering, among other things, PhD or post-doctoral positions to young academics, and commissioning research projects from university professors and their assistants. In doing so, RPI strategists attract highly qualified people with general skills to work on their research projects for a limited period of time.

In this respect, it is also interesting to note that project collaboration (*collaborazione a progetto*) can, by now, be considered institutionalized in Italy. Since 1973, the Italian government has launched a series of legislative decrees which grant tax relief to firms for employing the so-called *collaboratori a progetto*, i.e. project collaborators (DPR 597, 1973). As each decree was valid only for a few years, it was systematically substituted by a subsequent decree with very similar content. The last substitution occurred in 2003 when the so-called 'Biagi law', *legge Biagi (legge delega 30/2003)*, introduced the 'project employment contract', i.e. the *contratto di lavoro a progetto* (also called *co.co.pro*), thereby replacing the previous 'contract of coordinated and continuous collaboration', the *contratto di collaborazione coordinata e continuativa* (also called *co.co.co*). Interestingly, these *contratti* are atypical employment contracts as they allow firms to hire project collaborators who work on a company's (research) project for a maximum period of usually three years, during which the firm is granted fiscal advantages. Afterwards, firms are expected, but not obliged, to offer permanent employment contracts to collaborators (EIRO, 2004a; see also EIRO, 2005). But, since recruitment is not compulsory, Italian RPI firms often prefer to hire new collaborators instead of retaining the previous ones. In other words, radical product innovators use government subsidies as a means of securing general skills, rather than as an opportunity to endow future employees with specific qualifications. In doing so, the employment policies of Italian RPI strategists seems to differ from those of IPI pursers in that the latter are more inclined to retain project collaborators at the end of the three-year period.

When carrying out interviews, I discovered a second 'pathway to competitiveness' which RPI strategists in Germany and Italy systematically use to circumvent national rigidities and secure employees with general skills. They hire key scientists and managers from abroad. In doing so, RPI strategists rely on international institutions, open labour markets, to 'import' the required labour skills. As revealed by a recent study of biotech firms based around Munich,

such 'importation' has produced the unusual result that about half of those CEOs who led 15 of the most established firms in the early years of the new millennium were recruited from foreign labour markets. This leads Jong (2006, p. 9) to conclude that '[r]ather than relying on German labor markets to recruit their CEOs, Munich-based therapeutic biotech firms overwhelmingly went abroad to attract their most senior managers'.

These findings suggest that RPI strategists in rigid labour markets circumvent the skill shortage of employees with general qualifications in two ways. First, they make use of international labour markets and hire key scientists from abroad. I therefore argue that *importation via international institutions* constitutes an alternative pathway to competitiveness. Second, RPI strategists circumvent national constraints by defecting from typical labour-market institutions so as to conclude atypical contracts with employees. Consequently, I describe *improvisation on a contractual basis* as another pathway to competitiveness.

4.2 *Endowing employees with specific skills in flexible labour markets*

Similar arguments result from the study of how IPI strategists secure employees with specific skills in the UK with its ideal-typical flexible labour market. To begin with, interviews with German and Italian HR managers largely support the claim of the competitiveness literature that rigid labour-market institutions constitute a comparative advantage to IPI. By adhering to the typical labour-market institutions of their economy, German and Italian IPI strategists can exploit its comparative advantages, as employees are motivated to acquire specific skills. Accordingly, interviews revealed that a broad majority (75%) of the IPI pursuers interviewed in Germany were *tarifgebunden*, while the majority (60%) of Italian IPI pursuers pay homogeneous wage top-ups to their workforce. Furthermore, works councils with strong authority over lay-offs installed in 75% of the German and 80% of the Italian IPI firms, as well as legal notice periods and the occasional use of competition clauses tie employees to German and Italian IPI pursuers. This, in turn, motivates IPI employees to acquire specific skills and to work for 'their' firm for a long period of time. Consequently, average job tenure in German and Italian IPI strategists is 12.4 and 9.0 years, respectively.

Interestingly, though, the average period during which employees work for British IPI firms is not much lower, namely 8.0 years. And, as table 4 illustrates, IPI pursuers succeed in employing workers with specific skills. How is this possible? How can IPI pursuers in the UK compete despite the comparative disadvantages resulting from flexible labour-market institutions for their strategy? To answer these questions, I asked HR managers from British IPI strategists about the importance of works councils, competition clauses, and notice periods as promoters of specific skills. Interestingly, it turned out that none of these

institutions seems to play a significant role in tying employees to the company. Even though the use of competition clauses is more common in Britain than in Germany and Italy, they often serve as deterrents rather than strictly enforceable mechanisms. The reason for this is that, in the event of a lawsuit, judges tend to defend the position of the weaker party, namely the employee who wishes to change jobs. Hence, competition clauses do not necessarily insure employers of British IPI firms against the risk of poaching. They rather constitute a means of hindering key employees from leaving a firm on short notice (UkRPI1). Similarly, and in line with the argument of the competitiveness literature, weak works councils, short notice periods, and a variety of legally admitted causes of dismissal can expose employees of British IPI pursuers to the risk of lay-off.

Nevertheless, and contrary to the expectations of the competitiveness literature, I found that IPI firms endow their employees with specific skills in a variety of ways. First, they invest massively in training courses to advise employees on how their firm operates. Second, they offer attractive long-term career paths. To give an example, employees are offered the opportunity to participate in on-the-job training courses that prepare them for intra-firm promotion. About half of the IPI pursuers interviewed in the UK apply this measure. Some British IPI strategists also provide pension schemes which only become attractive over the long term (UkdQP6). While these initiatives are generally not uncommon in the UK, they seem to be particularly widespread among IPI firms, which in this way make sure that long-term employment enables their workforce to gain an in-depth understanding of how the firm operates.

Finally, IPI firms in the UK also invest in vocational training of future employees. More precisely, they offer young people the opportunity to do an internship, or to undertake an industrial placement as a part of their degree. In doing so, it is the stated aim of IPI strategists to recruit high-performing trainees at the end of their educational programme (UkRPI1; UkdQP2; UkdQP3; see also UkdQP6). Furthermore, British IPI firms encourage talented employees to enrol in higher education, for example, by embarking on an MSc in a field which is key to the company's activities, whereby the tuition fees for these programmes are usually covered by the firm. Obviously, employees are encouraged to obtain such degrees because the firm wishes to retain them upon completion of the programme. Before enrolling in higher education, IPI employees therefore sign a contract with their employers which stipulates that tuition fees have to be paid back if the employee in question leaves the company upon completion of the degree (UkdQP1; UkdQP2; see also UkdQP5; UkdQP6). These findings lead to the same conclusion as in Section 4.1. British IPI pursuers often circumvent national institutions and conclude atypical contracts with their employees so as to motivate them to acquire specific qualifications. *Improvisation on a contractual basis* thus constitutes an alternative pathway to competitiveness.

Given the efforts of British IPI employers to endow employees with specific skills, and given the willingness of British IPI employees to acquire such skills, two final questions remain. First, why do IPI employers invest in specific training if a flexible labour market entails the risk of skilled employees being poached by competitors? When I confronted British HR managers with this question, they were amazed by its reasoning: why should employees *leave* a firm which actively cares about their education? On the contrary, HR managers pointed out that the more a company invests in skills, the less likely the employees are to leave. The reason, simply, is that employees feel that their qualifications are appreciated, which, in turn, raises realistic hopes that the company will retain them and continue to invest in their careers (UkDQP3).

But why do employees of British IPI strategists invest in specific skills, given that they face the constant risk of overnight dismissal? Since I carried out interviews with HR managers, not with individual employees, I can only offer speculative answers here based on the overall insights gained in the course of this research project. As illustrated by contributors to the literature on ‘varieties of capitalism’ (Estevez-Abe *et al.*, 2001; Hall and Soskice, 2001), the costs of further education in flexible labour-market economies is passed on to potential employees. This means that employees who do not want, or cannot afford, to enrol in further education are left with basic compulsory education levels. Compared to the opportunity of receiving specific on-the-job training, this option seems preferable to remaining unskilled. Even if employees were to lose their job, they are presumably better off if they have received specific training. Furthermore, the risk of dismissal seems to be less acute for IPI employees than for those of RPI strategists, because IPI is less risky. The danger of total failure is thus reduced. And considering that IPI strategists rely heavily on and invest in the skills of their workforce, the latter are unlikely to be dismissed overnight. It seems therefore rational for IPI employees to invest in specific skills—even if the company which provides such training is located in a flexible labour market.

This reasoning confirms the above findings: that contributors to the competitiveness literature overestimate the stringency of labour-market institutions.¹⁹ Accordingly, the literature seems to overrate the risk of overnight dismissal related to the pursuit of IPI strategies. The fact that IPI strategists in flexible labour markets *can* dismiss employees at short notice does not mean that they *must* do so. At the same time, the literature also seems to underestimate the opportunities related to teaching and acquiring specific skills in flexible labour-market economies.

¹⁹See, for example, Porter (1990, pp. 126–130), Hollingsworth (2000, pp. 626–630), Estevez-Abe *et al.* (2001), Hall and Soskice (2001, pp. 36–44), Lindbeck and Snower (2001a), Sinn (2005) and Casper (2007).

5. Conclusions

So what have we learned about the link between institutions, employee skills and competitive strategies? To begin with, we have seen that the *level* of education *per se* is not related to the pursuit of diverse strategies. Instead, a balance seems to exist between the educational attainment, productivity, and the wage levels of employees. Low-skilled employees were therefore not found to be of competitive advantage to LCP. However, different skill *profiles* were found to constitute necessary input factors. While RPI firms importantly rely on employees with general skills, IPI strategists require employees with specific qualifications. LCP pursuers, in turn, do not need either of these skill profiles but rather use a mix of the two.

These insights suggest that, of the three competitive strategies, LCP is the least dependent on national institutions. But what about RPI and IPI strategies? Considering that RPI pursuers require labour skills which are typically provided by flexible labour markets, how can they compete in Germany and Italy, which both constitute ideal-typical examples of labour-market *rigidity*? And what do DQP strategists do in the UK, where the provision of specific skills is hampered by the labour-market's *flexibility*? How can firms compete despite comparative institutional disadvantages? The answer, in short, is that these firms circumvent national institutions and secure the required employee qualifications by relying on functionally equivalent institutions. Two such alternative institutional pathways to competitiveness have been identified. More concretely, *importation from abroad* was found to constitute the first alternative, by means of which RPI strategists in rigid labour-market economies hire key scientists and managers from abroad. Instead of employing key personnel with the necessary qualifications via national labour markets, RPI pursuers simply hire from international labour markets. In the case of the biotech cluster around Munich, the pronounced use of this functional equivalent institution has led to the striking phenomenon that CEOs of the 15 most established biotech firms were recruited from foreign labour markets at the start of the new millennium.

The second institutional alternative to securing the required labour qualifications instead of adhering to national institutions is, what I term here, *contractual improvisation*. By defecting from the economy's typical institutions, RPI firms in Germany and Italy, along with IPI strategists in the UK, are able to conclude atypical contracts so as to secure the required skill types. Accordingly, IPI strategists in the UK tie employees to their firm by offering attractive long-term career opportunities. They invest massively in specific training, for example, in courses which prepare participants for intra-firm promotion, and they provide pension schemes that become profit-yielding only in the long term. They also participate actively in the training of young people, for example by offering internships or industrial placements in order to retain the best performers

upon completion of their degree. In a similar vein, RPI strategists in Germany and Italy hire project collaborators for a limited period of time, they offer young academics the opportunity to undertake a PhD or a post-doctoral qualification in collaboration with their firm, and they commission research projects to universities. Finally, they also provide on-the-job training courses which teach employees general skills. Given the nationwide labour-market organization, these measures constitute atypical forms of securing necessary qualifications in an improvisational way.

The creativity, not to say the verve, with which firms exploit comparative advantages and, even more importantly, circumvent the comparative disadvantages of national institutions indicates that corporate competitiveness results from entrepreneurial inventiveness rather than from the institutional constellations of political economies. Whether or not an RPI strategist in a rigid labour market can gain competitive advantages may, for example, depend on the individual wage top-ups it succeeds in negotiating with its workforce, or on the offers it can make to attract key personnel from abroad. In other words, it depends on the creativity of each entrepreneur whether or not her firm will acquire the necessary skill profiles and, thus, be competitive. This, in turn, indicates that Schumpeter's perception of firms as 'enterprises' is particularly helpful to understand how firms can compete even in the face of comparative institutional disadvantages. When studying how economies, sectors or firms respond to changes 'in "condition"' (Schumpeter, 1947, p. 150), Schumpeter illustrates that the 'creative responses' and, thus, the most persistent changes come from those firms that are run by entrepreneurs. Contrary to managers who merely head the administration of a firm, 'the defining characteristic [of entrepreneurs] is [...] the doing of new things or the doing of things that are already being done in a new way' (ibid., p. 151). In line with Schumpeter's definition, the findings of this article indicate that firms gain competitive advantages because they are *not* administered by institution-taking managers, but because they are run by entrepreneurs who 'do new things' by acquiring all the necessary input factors in a creative way. Those contributions to the competitiveness literature which perceive firms as mere institution-takers therefore have a hard time explaining how firms compete in the face of comparative institutional disadvantages.

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